

REMARKS

Reconsideration of this application, as presently amended, is respectfully requested. Claims 29-129 are now pending in the present application, new claim 129 having been added by the present Amendment. Claims 70 and 95-127 were allowed.

Objection to the Claims

In the Office Action mailed June 29, 2006, the Examiner objects to the claims for not providing support in the specification for the word “physical”. The Office Action requires amending the specification to use the same words and phrases set forth in the claims.

Initially, it is noted that the claims were previously amended to change “selecting a parent profile representing an outline for design of a structure” to --selecting a parent profile representing an outline for design, the outline delineating a shape of a physical structure-- in order to obviate a rejection under 35 U.S.C. §101. In particular, in the previous §101 rejection, the Examiner asserted that the “structure” was an abstract concept, such as a data structure. In order to clarify that the claimed “structure” is not an abstract concept, the claims were amended to recite a “physical structure”.

In accordance with the Examiner's suggestion, page 9, line 19 of the specification has been amended to include language "physical structure" such that the specification is consistent with the claims. Support for this amendment is provided by the original description of the various structures that are the object of design. See, e.g., page 9, lines 18-21 of the application, which describes design of automobiles, airplanes, ships, trains, toys, etc. which are clearly physical structures, as opposed to other types of structures, such as a data structure.

Further, it is noted that the Examiner is permitted to give the claims their broadest reasonable interpretation that is *not inconsistent with the specification*. Applicants believe that interpreting the term "structure", set forth in the original claims, as a data structure, is not consistent with the specification, which clearly provides examples of structures being an automobile, airplane, ship, train, toy, etc. (see page 9, lines 18-21 of the specification). However, as noted above, applicants amended the claims to clarify the claimed "structure". In view of applicant's cooperation in attempting to clarify claim language that was objected to by the Examiner, if the terminology "physical structure" is not considered appropriate to define such structures as an automobile, airplane, ship, train, toy, etc., the Examiner is respectfully requested to suggest terminology that is considered suitable.

Further, claims 59 and 79 were objected to for informalities. Claims 59 and 79 have been amended to obviate these informalities.

In view of the above amendments and remarks, withdrawal of the objection to the specification is respectfully requested.

Claim Rejection-35 U.S.C. 101

In the Office Action mailed June 29, 2006, claims 29-36, 38-61, 62-69, 71-74 and 128 were rejected under 35 U.S.C. §101 as allegedly being directed to non-statutory subject matter.

Initially, it is noted that claims 37 and 70 were not rejected under §101. These claims recite “wherein the profiles are of an automobile.” It appears to be the Examiner’s position that specifically defining the type of profile brings the claims into statutory subject matter. However, as noted above, it is submitted that the profiles can be other physical structures than that of an automobile. Further, as discussed below, it is believed that the terminology “physical structures” defines statutory subject matter.

In Item 9 of the Office Action, the Examiner’s position, as best understood, is that independent claim 29 does not define statutory subject matter because it does not provide a tangible real world result. In support of this position, the Examiner asserts “A ‘physical structure’ is considered to be broad enough to include structures that cannot exist in the real 3-dimensional world.” See Office Action, page 4, lines 10-12. However, it is noted that the Office Action provides no further explanation or example of what is considered to be a physical structure that does not exist in the “real 3-dimensional world.” The Examiner supports the §101 rejection of independent claims 62 and 128 in a manner similar to that of claim 29, asserting that these claims do not produce a tangible real world result.

First, as noted above, the Examiner is permitted to give the claims their broadest *reasonable interpretation that is not inconsistent with the specification.* It is respectfully submitted that it is inconsistent with the specification to attribute to the term “physical structure”

a meaning that does not correspond to a structure that exists in the “real 3-dimensional world”. As noted above, the specification describes the invention as applicable to structures, such as automobiles, airplanes, ships, trains, toys, etc. which are clearly structures that exist in the real three-dimensional world. Accordingly, for at least this reason it is submitted that the claims provide a tangible real world result and define statutory subject matter.

Second, the Office Action provides no further explanation or example of what is considered to be a physical structure that does not exist in the “real 3-dimensional world.” If the rejection is maintained, applicants respectfully request that the Examiner clarify how the terminology “physical structure” is being interpreted (in a manner that is not inconsistent with the specification) such that the physical structure does not exist in the real three-dimensional world.

In summary, it is respectfully submitted that the claimed “new outline delineating a new shape of the physical structure” is a tangible real world result defining statutory subject matter. Reconsideration and withdrawal of the rejection under §101 are respectfully requested.

Claim Rejections -35 U.S.C. §102

In the June 29, 2006 Office action, claims 29-35, 38, 40, 44-61 and 128 were rejected under 35 U.S.C. §102(b) as being anticipated by **Bentley et al.**, “Conceptual Evolutionary Design By a Genetic Algorithm” (previously cited). For the reasons set forth below, this rejection is respectfully traversed.

Initially, it is noted that independent claims 62-94 have not been rejected in view of prior art and are only rejected under §101. Accordingly, in view of the above remarks, it is submitted that claims 62-94 are in condition for allowance.

In the previous amendment, the features of “selecting at least one segment of the divided segments”, “modifying the at least one dimensional characteristic of the selected at least one segment” and “evolving the parent profile … including evolving the modified at least one dimensional characteristic of the selected at least one segment …” were added to the independent claims to distinguish over the cited prior art. It is respectfully submitted that these features are not disclosed or suggested by **Bentley et al.**

More specifically, with respect to the rejection of independent claims 29 and 128, the Office Action asserts that the feature “*selecting at least one segment of the divided segments*” is disclosed by **Bentley et al.** in Fig. 8 and the accompanying description on page 9, “Using a single primitive of the representation, a variety of differently oriented prisms were successfully evolved, with highly accurate designs being produced every time, fig. 8.”

It is respectfully submitted that Fig. 8 of **Bentley et al.** does not disclose or suggest “selecting at least one segment of the divided segments”. More particularly, Fig. 8 illustrates an embodiment wherein a right angle prism is evolved. As set forth in the first paragraph of section 5.3 of **Bentley et al.**, “All designs *except for the right-angle prisms were defined by two primitives* of the solid object representation… .” As shown in Fig. 8, **one primitive** defines the right-angle prism.

However, the Examiner considers the claimed “parent profile” to correspond to a number of non-overlapping primitives. Further, the Examiner considers the segments into which the parent profile is divided to correspond to respective primitives of the number of non-overlapping primitives. Accordingly, Fig. 8 of **Bentley et al.** can not disclose or suggest the step of “selecting at least one segment of the divided segments” because Fig. 8 is an embodiment that only uses a *single primitive*.

In other words, because the embodiment of Fig. 8 includes only one primitive, it includes only one “segment” and does not include “divided segments”. Therefore, Fig. 8 can not disclose “*selecting at least one segment of the divided segments*” because there are no *divided segments* to select from.

Moreover, it is respectfully submitted that **Bentley et al.** does not disclose or suggest “modifying the at least one dimensional characteristic of the selected at least one segment”. First, it is submitted that because **Bentley et al.** do not disclose the “selecting” step, it follows that **Bentley et al.** do not disclose the “modifying” step because these steps are interrelated.

Further, the Office Action asserts “Examiner interprets the rotational differences between the two prisms shown in [Fig. 8] to be due to modifying the at least one dimensional characteristic of the selected primitive (segment).” However, **Bentley et al.** only generally disclose that the different orientations of the right angle prisms shown in Fig. 8 are due to evolving the prisms. **Bentley et al.** are completely silent regarding whether a dimensional characteristic of a selected segment is modified prior to evolving the parent profile, including evolving the modified at least one dimensional characteristic of a selected segment.

In other words, **Bentley et al.** simply disclose that the different orientations of the right angle prisms are a result of evolving a primitive. **Bentley et al.** do not disclose or suggest that a modification of the primitive occurs prior to an evolving operation, as presently claimed.

In view of the above remarks, it is submitted that independent claims 29 and 128, and claims dependent therefrom, patentably distinguishes over the cited prior art.

Claim Rejections – 35 U.S.C. §103

Claim 36 was rejected under 35 U.S.C. §103 as being unpatentable over **Bentley et al.** in view of **Jones et al.**, “Development and Validation of a Genetic Algorithm for Flexible Docking” (previously cited). Claim 37 was rejected under 35 U.S.C. §103 as being unpatentable over **Bentley et al.** in view of **Renner**, “Geometric Optimization with Genetic Algorithms” (previously cited). Claims 39 was rejected under 35 U.S.C. §103 as being unpatentable over **Bentley et al.** in view of **Faccenda et al.**, “A Combined Simulation/Optimization Approach To Process Plant Design” (previously cited). Claims 41-42 were rejected under 35 U.S.C. §103 as being unpatentable over **Bentley et al.** in view of **Bedwell et al.**, “Artificial Evolution of Algebraic Surfaces” (previously cited). Claim 43 was rejected 35 U.S.C. §103 as being unpatentable over **Bentley et al.** in view of **Rowland et al.**, “Evolutionary Co-operative Design Between Human and Computer: Implementation of ‘The Genetic Sculpture Park’.”

Because each of claims 36, 37, 39 and 41-43 depend from claim 29, it is submitted that these claims are allowable for the same reason set forth above for claim 29 by virtue of their dependency thereon.

New Claim

New claim 129 has been added by the present invention. New claim 129 depends from claim 28 and recites a genetic design method as recited in claim 29, wherein the physical structure is one of an airplane, a ship, a train and a toy. It is submitted that none of the cited prior art disclose a genetic design method wherein a parent profile representing an outline for design is selected, the outline delineating a shape of one of an airplane, a ship, a train and a toy.

CONCLUSION

In view of the foregoing amendments and accompanying remarks, it is submitted that all pending claims are in condition for allowance. A prompt and favorable reconsideration of the rejection and an indication of allowability of all pending claims are earnestly solicited.

If the Examiner believes that there are issues remaining to be resolved in this application, the Examiner is invited to contact the undersigned attorney at the telephone number indicated below to arrange for an interview to expedite and complete prosecution of this case.

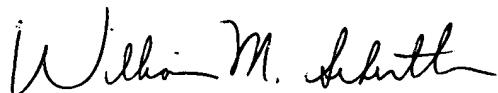
Application No. 10/649,936
Art Unit: 2121

Submission of Amendment under 37 C.F.R. §1.114
Attorney Docket No.: 991334A

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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